

REMARKS/ARGUMENTS

Amendments to Specification

Two minor editorial amendments have been made to paragraphs in the specification by replacing the paragraph starting on page 9, line 6 and replacing the paragraph starting on page 9, line 20. The amendments have been made to correct terms that have incorrect numerical identifiers and a to correct a grammatical error.

Status of Claims

Allowance of claims 12 to 15 is gratefully acknowledged.

The Examiner has objected to claims 2, 6-8, 17 and 19, but has stated that the claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Therefore, claims 2, 17 and 19 have been rewritten in independent form.

Claims 1-19 remain in the application. New claims 20 and 21 have been added to the application.

Amendments to Claims

Claims 1, 3-5, 16 and 18 have been amended to replace the expression “overload condition” with “received signal condition”. It is submitted that this change does not fundamentally change the scope of the claims, but merely focuses the particular “condition” being sensed to be associated with the received signal.

Claims 1, 9, 16 and 18 have also been amended to include the limitation that “the sensed received signal condition [overload signal] indicating that the desired received radio signal within the received radio signal is overloaded by an undesirable additional received radio signal component.” Description of this condition is found starting at page 1, line 26 of the specification in the Background section and starting at page 8, line 19 of the Detailed Description of the Invention. Support for the limitation in the context of embodiments of the invention can be found in the Abstract, as well as starting on page 9, line 20 in which an improvement is introduced to aid in “enabling the radio front-end to detect strong interfering signals”.

Claims 1 and 16 have been further amended to include the limitation “setting a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal”. Support for “setting a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal” is derived from the specification. As discussed in the Background of the Invention section on page 1, line 26, “received GPS signals are typically weak and thus are easily interfered with by other radio transmissions in the same or adjacent frequency bands”. Page 8, line 19 describes that “when a large interference signal is present the front-end radio circuits become overloaded and the GPS signal is corrupted”. To determine when a GPS signal is overloaded by “a large interference signal” a comparator is used to compare the size of the received radio signal with a threshold value. The threshold value is set at a level which indicates when the GPS signal is overloaded by the “large interference signal”. The manner of deciding the level at which the GPS is determined to be overloaded is when the GPS signal is larger than the maximum value it is expected to be.

An example embodiment of using such a comparator is described in relation to Figure 3, which illustrates an overload detector 211. On page 12, starting at line 1, the specification describes in general terms how the overload detector 211 of Figure 3 operates. At line 14, in particular it states “Lastly, the emitter node 60 is connected to a comparator 70, the comparator also having a second input connected to a voltage reference VREF and an output from which the overload signal 40 can be tapped”. The VREF value is the threshold level which determines the overload condition. It is this voltage value that is set as the threshold level and can reasonably be expected to be set at a level that is useful in determining when the desired received radio signal is overloaded by an additional received radio signal component.

Further on page 14, starting on line 1, the specification continues to describe the operation of the overload detector. “During large signal operation, i.e., overload operation the differential input V_{in} received from the mixer 208 causes the BJT’s Q1 and Q2 to switch on and off depending on the phase of the signal at any given instant. The large input signal swing causes the instantaneous base voltage at any given instance to be very large and in turn forces the common emitter node 60 voltage V_E to rise such that the base-emitter voltage remains approximately equal to the 0.7 Volt threshold voltage intrinsic to the base-emitter PN junction of the BJT. Once V_E rises significantly in relation to VREF the comparator switches the overload

signal 40 to indicate that the radio front-end is being overloaded by a strong transmission within the same transmission band or within an adjacent signal band”. Voltage VE is a function of the received radio signal input to the overload detector. As described, when VE is significantly larger than VREF (threshold) then an overload signal condition is set.

Claims 9 and 18 have been further amended to include the limitation of the overload detector “having a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal”. Support for this amendment is derived in the same manner as described above with regard to the amendment in claims 1 and 16 of “setting a threshold” .

In addition, the threshold level that is being identified is not intended to indicate a threshold level that is potentially damaging to the radio receiver, but to indicate a threshold level that indicates a signal strength that is larger than the typical signal strength known to be associated with a desired radio receiver signal. An example described in the application (Abstract or page 8, line 19 as noted above) is a relatively small signal strength of a received GPS signal in comparison to a transmitted signal from a co-located radio transmitter that is also received by the radio receiver.

Claims 20 and 21 have been added to the application and recite methods for operating a radio receiver comprising a radio receiver back-end and limiting the effect of interfering transmission on a GPS receiver, respectively. These methods contain method steps comparable to the subject matter of device claims 12 and 15.

Double Patenting Rejection

The Examiner has rejected claims 1-19 under obvious-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 6,681,181.

Submitted herewith is a terminal disclaimer in compliance with 37 CFR § 1.321, together with the prescribed fee under 37 CFR § 1.20(d).

An assignment from inventor Dennis Fielder was recorded in the parent application, now patent No. 6,681,181 on July 19, 2002 at Reel/Frame 013108/0576.

35 U.S.C 102 Claim Rejections

The Examiner has rejected claims 1, 3-5, 10-11, 16 and 18 under 35 U.S.C. 102(e) as

being anticipated in view of Calixte (U.S. Patent No. 6,400,934). The Examiner states that Calixte discloses a method for a radio receiver input off-channel and on-channel overload protection. The Examiner further states that according to Calixte as found in the abstract and columns 2 and 3, there is provided sensing an overload condition in the radio receiving front-end when a received radio signal is above a threshold: and generating an overload signal in response to sensing the overload condition.

Claim 1, amended as described above, recites “setting a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal” and “sensing a received signal condition in the radio receiver front-end when a received radio signal is above the threshold, the sensed input signal condition indicating that a desired received radio signal within the received radio signal is overloaded by an additional received radio signal component”. By the Examiner’s above statement and as found in the abstract, Calixte discloses protecting receiver circuitry from high radio frequency overload voltages input to the antenna. Amended claim 1 is directed to sensing a condition where a desired received signal is indicated to be overloaded within the overall received signal containing an additional undesirable signal component. The application of the invention is not directed to protection of the radio receiver but to indicating when the desired radio receiver signal is overloaded or saturated by a larger signal, a situation in which no useful information can be derived from the overall receiver radio signal. Calixte does not disclose that the sensed received signal condition indicates “that a desired received radio signal within the received radio signal is overloaded by an additional received radio signal component”.

For at least the above-described reasons it is submitted that Calixte does not disclose or suggest these limitations in defining the condition of the received signal. As Calixte does not disclose all the features of amended claim 1, it is not possible for Calixte to anticipate amended claim 1. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(e) anticipation rejection of claim 1.

Claims 3-5 are dependent upon claim 1. As amended claim 1 has been shown not to be anticipated by Calixte for the reasons described above, it is not possible for Calixte to anticipate claims 3-5. Therefore, claims 3-5 should be allowable.

Claim 10 recites an additional limitation that the radio receiver front-end of claim 9 is integrated into a GPS (Global Positioning System) receiver. The Examiner makes no reference to Calixte disclosing the features of claim 9. Also, Calixte does not mention or suggest the use of a GPS in any manner. For at least these reasons it is submitted that Calixte does not disclose all the features of claim 10 and as such it is not possible for Calixte to anticipate claim 10. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(e) anticipation rejection of claim 10.

Claim 11 is also dependent upon claim 9. The Examiner makes no mention of how the subject matter of claim 9 is disclosed by Calixte. As the Examiner has not explicitly described how Calixte discloses all the features of claims 9 or 11, it is submitted that Calixte does not disclose all the features of claim 11 and as such it is not possible for Calixte to anticipate claim 11. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(e) anticipation rejection of claim 11.

Claims 16 and 18 have been amended to include similar subject matter to that of amended claim 1. It is suggested that for the same reasons described above with regard to amended claim 1 amended claims 16 and 18 are not anticipated by Calixte and as such the claims should be allowable.

The Examiner has rejected claims 1, 3-5, 10-11, 16 and 18 under 35 U.S.C. 102(b) as being anticipated in view of Meador (U.S. Patent No. 5,953,640). The Examiner states that Meador discloses a configuration single chip receiver integrated circuit architecture. The Examiner further states that according to Figure 2 and columns 5, 8 and 9 Meador discloses a radio receiver front-end for receiving radio signals, the radio receiver front-end comprising: an overload detector for generating an overload signal when a received radio signal is above a threshold; and an output port connectable to a radio receiver back-end, the output port used for coupling the overload signal to the radio receiver back-end.

Claim 1, amended as described above, recites “setting a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal” and “sensing a received signal condition in the radio receiver front-end when a received radio signal is above the threshold, the sensed input signal condition indicating that a desired received radio signal within

the received radio signal is overloaded by an additional received radio signal component”. The Examiner indicates columns 5, 8 and 9 disclose the subject matter of the rejected claims. Meador discloses explicitly at column 5, lines 31 to 35 and in claim 1 what components are included in the receiver front-end and what components are included in the receiver back-end. Meador discloses an automatic gain control (AGC) circuit and a limiter in the receiver back-end. It is assumed that these are the components that the Examiner alleges disclose the overload detector. If this is indeed the Examiner’s position, it is submitted that these components are contained in the receiver back-end, not the receiver front-end as recited in amended claim 1, and as such Meador does not disclose all the features of amended claim 1.

In addition, amended claim 1 is directed to sensing a condition where a desired received signal is indicated to be overloaded or saturated within the overall received signal, which includes an undesirable additional signal component. Meador has an AGC circuit “to prevent a strong on-channel signal from overloading the receiver” (column 2, lines 44-46). Meador seems to be providing protection for the receiver with the aid of the AGC, which is not the purpose of comparing the received radio signal to the threshold in amended claim 1. Meador does not disclose that the sensed received signal condition indicates “that a desired received radio signal within the received radio signal is overloaded by an additional received radio signal component”.

As Meador does not disclose all the features of amended claim 1, it is not possible for Meador to anticipate amended claim 1. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim 1.

Claims 3-5 are dependent upon claim 1. As amended claim 1 has been shown not to be anticipated by Meador for the reasons described above, it is not possible for Meador to anticipate claims 3-5. Therefore, claims 3-5 should be allowable.

Claim 10 recites an additional limitation that the radio receiver front-end of claim 9 is integrated into a GPS receiver. The Examiner makes no reference to Meador disclosing the features of claim 9. Meador does not mention or suggest the use of a GPS in any manner. For at least these reasons it is submitted that Meador does not disclose all the features of claim 10 and as such it is not possible for Meador to anticipate claim 10. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim

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Claim 11 is also dependent upon claim 9. The Examiner makes no mention of how the subject matter of claim 9 is disclosed by Meador. As the Examiner has not explicitly described how Meador discloses all the features of claims 9 or 11, it is submitted that Meador does not disclose all the features of claim 11 and as such it is not possible for Meador to anticipate claim 11. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim 11.

Claims 16 and 18 have been amended to include similar subject matter to that of amended claim 1. It is suggested that for the same reasons as described above with regard to amended claim 1 amended claims 16 and 18 are not anticipated by Meador and as such the claims should be allowable.

The Examiner has rejected claims 1, 3-5, 10-11, 16 and 18 under 35 U.S.C. 102(b) as being anticipated in view of Lynk, Jr. (U.S. Patent No. 4,761,829).

Claim 1, amended as described above, recites “setting a threshold to indicate when a received radio signal is significantly larger than a desired received radio signal” and “sensing a received signal condition in the radio receiver front-end when a received radio signal is above the threshold, the sensed input signal condition indicating that a desired received radio signal within the received radio signal is overloaded by an additional received radio signal component”. The Examiner alleges Figure 1 and columns 3 and 4 disclose the subject matter of the rejected claims. In Figure 1 and at column 3, lines 1-9 Lynk, Jr. discloses explicitly a receiver front-end 20. Lynk, Jr. also discloses a detector 40, a digital attenuator 50, and a control signal generating means 90 as existing external to the receiver front-end 20. Applicant assumes that it is some combination of these components that the Examiner alleges can disclose sensing an overload condition. If this is indeed the Examiner’s position, it is submitted that these components are not contained in the receiver front-end as recited in amended claim 1, and as such Lynk, Jr. does not disclose all the features of amended claim 1.

In addition, Lynk, Jr. discloses using a received signal strength indicator (RSSI) 100 to determine the signal strength of a received signal. However, there is no disclosure of comparing a received radio signal to a threshold and a resulting determined received signal condition based on

the comparison indicating that a desired received radio signal within the received radio signal is overloaded or saturated by an undesirable additional received radio signal component.

For at least the reasons presented above it is submitted that Lynk, Jr. does not disclose all the features of amended claim 1 and as a result it is not possible for Lynk, Jr. to anticipate amended claim 1. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim 1.

Claims 3-5 are dependent upon claim 1. As amended claim 1 has been shown not to be anticipated by Lynk, Jr. for the reasons described above, it is not possible for Lynk, Jr. to anticipate claims 3-5. Therefore, claims 3-5 should be allowable.

Claim 10 recites an additional limitation that the radio receiver front-end of claim 9 is integrated into a GPS receiver. The Examiner makes no reference to Lynk, Jr. disclosing the features of claim 9. Lynk, Jr. does not mention or suggest the use of a GPS in any manner. For at least these reasons it is submitted that Lynk, Jr. does not disclose all the features of claim 10 and as such it is not possible for Lynk, Jr. to anticipate claim 10. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim 10.

Claim 11 is also dependent upon claim 9. The Examiner makes no mention of how the subject matter of claim 9 is disclosed by Lynk, Jr.. As the Examiner has not explicitly described how Lynk, Jr. discloses all the features of claims 9 or 11, it is submitted that Lynk, Jr. does not disclose all the features of claim 11 and as such it is not possible for Lynk, Jr. to anticipate claim 11. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 102(b) anticipation rejection of claim 11.

Claims 16 and 18 have been amended to include similar subject matter to that of amended claim 1. It is suggested that for the same reasons as described above with regard to amended claim 1 amended claims 16 and 18 are not anticipated by Lynk, Jr. and as such the claims should be allowable.

35 U.S.C 103 Claim Rejections

The Examiner has rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over

Lynk, Jr. in view of Johnson (U.S. Patent No. 5,420,592).

The Examiner states that Lynk, Jr. discloses a receiver front-end that receives signal from an antenna but does not disclose that the receiver front-end is integrated into a GPS receiver. It is alleged that Johnson does disclose such a radio receiver front-end integrated into a GPS receiver. It is further suggested by the Examiner that it would have been obvious to one skilled in the art at the time of the invention to be motivated to modify the system of Lynk, Jr. by incorporating the GPS receiver with the front-end from the system of Johnson for improved accuracy of such a system.

Claim 9 does not recite a radio receiver integrated into a GPS receiver. It is possible the Examiner intended to object to claim 10, which does contain such a limitation.

Claim 9, amended as described above, recites “an overload detector for generating an overload signal when a received radio signal is above a threshold absent a received radio signal that is above a damage threshold, the overload signal indicating that a desired received radio signal within the received radio signal is saturated by an additional received radio signal component”. As described above with regard to claim 1, Lynk Jr. does not disclose the feature that an overload signal derived from exceeding a threshold indicates that a desired received radio signal is saturated by other received radio components.

For at least the reason presented above that Lynk Jr. does not disclose all the features of independent claim 9, it is submitted that the Examiner has not satisfied the first criteria for establishing a prima facie case of obviousness with regard to claim 9, namely that either alone or in combination, all the features of claim 9 are disclosed by the cited references.

As Lynk Jr. does not disclose the limitation included in amended claim 9, there is no motivation to combine the references of Lynk Jr. and Johnson as one skilled in the art would not arrive at the embodiment of the invention as recited in claim 9 by combining the references. It is submitted that for at least this reason the Examiner has not satisfied the third criteria for establishing a prima facie case of obviousness, namely there must be motivation to combine references. This is another reason why it is suggested that the Examiner has failed to establish a prima facie case of obviousness with regard to claim 9.

As the Examiner has failed to establish a case of prima facie obviousness for the reasons described above, it is respectfully requested that the Examiner reconsider and withdraw the 35 U.S.C. 103(a) obviousness rejection of claim 9.

In view of the forgoing, early favorable consideration of this application is earnestly solicited.

Respectfully submitted,

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